

The impact of perceived usefulness & perceived ease of use on the successful adoption of information systems in developing countries

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Abstract: In this research the data collected and used to investigate, examine and identify the impact of perceived usefulness (PU) & perceived ease of use (PEOU) on the successful adoption of information systems (IS) in developing countries. A questionnaire was designed to rate the successful adoption, utilization and implementation of the information systems in the developing countries. Structural Equation Modelling SEM was used to analyse the collected data. The research findings showed that perceived usefulness & perceived ease of use had direct and indirect effects on successful adoption of information systems.

The study findings could represent a starting point for further studies to cover other factors influencing the IS adoption and facilitate decision makers to avoid failure of IS in developing countries.

Key Word: Structural Equation Modelling, Information Systems, Adoption of Information Systems, Developing Countries.

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I. Introduction

Information systems abbreviated as IS, are a class of computerized information supports the organizational or people activities and should be able to assist an organization to save time, money and effort. These systems are known as information systems (IS) and are described as computer-based information systems that aid the process to confront strategic issues and problems via direct interaction with data and information [1]. The design of information systems is mainly to increase an organization's productivity, to reduce the costs of the product in the organization, to increase the quality of services offered and the decisions quality to save time [2]. As many institutions and organizations continue to embrace and extensively invest in modern technology with large amounts of resources channeled to new information technology IT, assessing and evaluating the potential significance, benefits and acceptance of these new technologies are critical [3]. This argued from the fact that if any new technology is easy accepted and conveniently adopted by users, there is a high possibility of the system and its investment to have a successful impact on the institution [4].

Information systems are a set of programs that are used to archive, manage and organize data, and process them with specific procedures established according to the workflow mechanism in the organization, in order to obtain the final outputs, and it is indicated that information systems are completely different from information technology, as information systems use information technology technologies That was created to serve its business based on it.

Information systems, along with information technology, financial resources, raw materials, and machinery are considered one of the five primary resources available to enterprise managers, and the position of head of the information department has been created in many companies, which is equivalent in importance to many other positions.

Adoption is to take innovation as the main action course and to make decisions that follow the innovations. Rogers, [5] defined the adoption as: "A decision to make full use of an innovation as the best course of action, whereas rejection is a decision not to adopt an available innovation". Determination of the potential of these new information systems is quite important [6]. There are high chances of the system and services increasing in an organization if the new information system is adapted successfully and accepted by the organizations [7]. These organizations will, therefore, benefit from the new information system. Adoption of IS involves many processes that an organization or a potential adapter has to pass through before a new system is accepted in an organization [8].

Perceived Usefulness (PU) is one of the independent constructs in the Technology Acceptance Model (TAM) and it is "the degree to which a person believes that using a particular system would enhance his/her job performance" [9]. Perceived Ease of Use (PEOU) refers to the degree to which a person believes that using a

particular system would be free of effort. An application perceived to be easier to use than another is more likely to be accepted by users [9].

II. Data Management & Analysis

The objective of this research is to investigate, examine and identify the substantial reasons for failures of information systems adoption in developing countries. This investigation is based on the following system aspects: perceived usefulness (PU) & perceived ease of use (PEOU). To achieve this, a questionnaire was designed and distributed to collect the data. The data gathered was then analyzed using the Statistical Package for Social Software (SPSS) v.22 and Analysis of a Moment Structures (AMOS) v. 23.

The researcher conducted descriptive analyses using SPSS 22.0 and the path models were analyzed using SPSS AMOS 23. Direct and indirect relations among the variables were identified by the path model test. Adoption of information systems was endogenous variable. Exogenous variables were; perceived usefulness and perceived ease of use.

Construct validity and Internal consistency was examined using Cronbach’s alpha (.700) Cronbach’s alpha normally ranges between 0 and 1, the closer Cronbach’s alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale [10].

Variables were checked to ensure that they met assumptions of normal distribution and multicollinearity [11]. Multicollinearity assessed by examining Variance Inflation Factor and the tolerance (VIF). It is always greater than or equal to 1 [12], no multicollinearity issue and the assumption of reasonable independence among predictor variables was met (Table no 1).

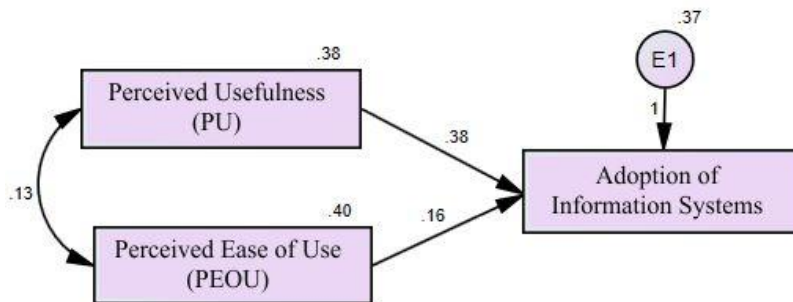
Table no 1: Tolerance and the Variance Inflation Factor.

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Perceived Usefulness	.627	1.596
	Perceived Ease of Use	.782	1.279

a. Dependent Variable: Adoption of IS

Path analysis

The researcher used a model to map out the relationship between the variables and to test the fit of a hypothetical model with the empirical data. Path analysis technique was used to test the pathways through which variables effects each other and to test the validity of the model (good fitting) model (Figure 1).



Chi-square (df) = .000; GFI (>=0.95) = 1.000; CFI (>=0.90) = 1.000

Figure 1.Final Path Model (standardized regression coefficients and correlation between variables).

Model fit summary

While there is some disagreement over which specific tests are the “best” to use, it is commonly recommended that researchers examine more than one fit statistic when evaluating model fit. X², GFI, NFI, or CFI, NNFI and SRMR tests were recommended by [13]. Barrett, [14] defined CMIN as a Chi-square statistic comparing the tested model and the independence model to the saturated model. The overall fit of the model was assessed using the fit indices Chi Square test. Chi-square = 0.000, Degrees of freedom df = 2 and Probability level p-value = .511. RMR is the root mean square residual, the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model. RMR for our model = .098. Smaller is better.

GFI is the goodness of fit index that indicates what proportion of the variance in the sample variance-covariance matrix is accounted for by the model. .90, or greater indicate well-fitting models [15]. GFI for our model = 1.000. AGFI is the adjusted good of fit index. It is an alternate GFI index in which the value of the index is adjusted for the number of parameters in the model. The closer the AGFI will be to the GFI. .90, or greater indicate well-fitting models [16]. AGFI for our model = .976. PGFI is the parsimony good of fit index. The index is adjusted to reward simple models and penalize models in which few paths have been deleted. The PGFI is based upon the GFI by adjusting for the loss of degrees of freedom [17]. PGFI for our model = .069. NFI is the normed fit index, this statistic assesses the model by comparing the χ^2 value of the model to the χ^2 of the null model [18]. Values of .9 or higher indicate good fit [19]. NFI for our model = 1.000. CFI is the comparative fit index [20]. Values closer to 1.0 indicate good fit [21]. CFI for our model = 1.000. RMSEA is the root mean square error of approximation. It is estimated the lack of fit compared to the saturated model. RMSEA values of 0.08 to 0.10 provide a mediocre fit and below 0.08 show a good fit [22]. RMSEA for our model = .000. Model fit output summarized in (Table no 2).

Table no 2: Model fit output.

Model	CMIN	P	RMR	GFI	AGFI	PGFI	NFI	CFI	RMSEA
Defaultmodel	.000	.511	.000	1.000	.976	.069	1.000	1.000	.000
Saturated	.000		.000	1.000			1.000	1.000	
Ind. model	58.958	.000	.098	.813	.626	.406	.000	.000	.318

The path model revealed that perceived usefulness (PU) and perceived ease of use (PEOU) had a positive significant direct effect on successful adoption of information systems.

Perceived usefulness (PU) is a significant factor affecting the acceptance of an information system in an organization in a developing country. Perceived usefulness can be defined as the degree to which an individual agrees to the fact that the adoption of information system in an organization will affect the firm or organization in a positive manner and benefit the developing country. Davis [9] defined the perceived usefulness as "Perceived usefulness is defined here as "the degree to which a person believes that using a particular system would enhance his or her job performance". The researcher found that perceived usefulness has a positive direct effect on the successful adoption of information systems which was consistent with findings from previous studies [2, 3, 19, and 20].

Perceived Ease of Use (PEOU) can be defined as how the efforts of the adapter will be reduced in terms of work done when the information system is put into practice in a given organization or business firm within the developing countries. It is a major factor that is affecting the acceptance of the new information system in most developing countries. The researcher found that perceived ease of use has a positive direct effect on the successful adoption of information systems which was consistent with findings from previous studies [21, 22, and 23]. This is, however, contrary to a previous study Aldhmour&Eleyan, [24] which found that PEOU has no effect on the successful adoption of IS.

III. Conclusion

The researcher considered the model was a good fit based on the analysis output. Overall, the model achieves acceptable fit based on the recommended and acceptable indices values. This research identified factors influencing the successful adoption of information systems in developing countries.

The study found that perceived usefulness and perceived ease of use had direct effects on successful adoption of information systems. The study findings could represent a starting point for further studies to cover other factors influencing the success adoption of information systems and facilitate decision makers to avoid failure of information systems in developing countries.

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